



## Complex dorsal subluxation of the metacarpo-phalangeal joint of the thumb requiring open reduction : A case report

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**The authors present an case of a thumb metacarpo-phalangeal joint dislocation which was made complicated by the interposition of the sesamoid bone which required open reduction. The intact volar plate prevented closed reduction. The anatomy and surgical management of this unusual case is described.**

**Keywords :** metacarpo-phalangeal joint ; thumb ; subluxation ; dislocation.

### INTRODUCTION

Dorsal dislocation of the thumb metacarpophalangeal (MP) joint occurs with a tear in the volar plate. This injury frequently requires open reduction, as it is made complex by interposition of the damaged volar plate in the joint. We present a case of dorsal subluxation of this joint in which the volar plate remained intact but, due to sesamoid dislocation, open reduction was nonetheless required.

### CASE REPORT

A 21-year-old right-handed man was admitted to our unit thirty hours after having fallen on to his left thumb. On examination, the proximal phalanx of the thumb was found to be prominent and malaligned with the dorsal aspect of the first metacarpal. Active movements at the MP joint were

not possible. Radiographs confirmed the presence of a subluxation of the thumb MP joint, with dorsal displacement of the proximal phalanx (fig 1).

Under general anaesthesia, closed reduction was attempted but was unsuccessful. Open reduction via a volar approach through a zig-zag incision was performed. No rupture of the volar plate could be identified and the collateral ligaments were intact. The joint, however remained irreducible. For improved exposure, the A1 pulley was released and the tendon of flexor pollicis longus retracted. This manoeuvre had no effect on the position of the joint, but revealed that the ulnar sesamoid had dislocated in a palmar direction around the condyle of the first metacarpal head. The volar plate was split longitudinally between the sesamoid bones to enter the joint. No intra-articular body preventing reduction was found. The sesamoid dislocation was then reduced. Once this had been performed, reduction of the MP joint was achieved with ease (fig 2). The

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**Fig. 1.** — a. Preoperative radiograph of thumb MCP joint showing subluxation and sesamoid bone interposition (Arrow); b. Preoperative oblique radiograph demonstrating subluxation of thumb MCP joint.

volar plate was repaired and the wound closed. The reduction was protected using a dorsal blocking splint, which was removed after two weeks. Active exercises were then commenced. At 9 weeks the patient had regained full motion and function, with stability identical to the contra-lateral, uninjured thumb.

## DISCUSSION

The MP joint of the thumb is a condyloid (hinged) joint, with a quadrilateral rather than spherical metacarpal head. The volar plate of the thumb MP joint is adherent to two sesamoid bones that articulate with the metacarpal head. The ulnar



*Fig. 2.* — Post operative radiograph of reduced complex subluxation of the MCP joint following open reduction.

sesamoid is usually the larger. In contrast to the sesamoids in a finger that, aside from being rarer, are confined to the volar plate of the joint, the sesamoids at the MP joint of the thumb are situated within the lateral margins of the plate and are incorporated in the tendinous insertions of both flexor pollicis brevis and adductor pollicis on either side of the joint. As a result of these attachments, the constancy and location of the sesamoids is important in conferring stability to the thumb MP joint. In the example described above, the sesamoid and hence also the insertion of adductor pollicis itself was displaced around the metacarpal head. Thus, the mechanical effect of the sesamoid being trapped around the quadrilateral shaped metacarpal head, together with the altered direction of action of adductor pollicis, led to the failure of closed reduction.

In conclusion, we report a case of thumb MP joint subluxation in which the complicating pathology necessitating open reduction was sesamoid dislocation and entrapment around the metacarpal head. This is in contrast to dorsal dislocation where joint interposition of the ruptured volar plate is commonly the block to closed reduction. In fact the integrity of the volar plate and collateral ligaments in this case prevented excessive distraction of the joint and thus was an impediment to closed reduction.

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